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ABSTRACT

To examine the influences of direct instructional principles on student learning, this study compared the results of using two different versions of an instructional television program. One version consisted of a randomly-selected ITV science program from the Educational Broadcasting Corporation's science series, "Odyssey," while the second version was a revision of the original program in which the commentary had been altered to conform more closely to the principles of direct instruction. These principles include (1) provision of clear goals; (2) extensive content coverage; (3) easy-to-difficult sequencing; (4) reviews; and (5) cues for attention-focusing. Subjects were 283 children from four lower-middle class fourth, fifth, and sixth grades. Results showed that the experimental group, who viewed the revised program, performed significantly better on a content test. It was concluded that the direct instructional model deserves further consideration. (LMM)

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Improving teaching on television: The utility of direct instructional principles.

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Improving teaching on television: The utility of direct instructional principles.

Abstract

Studies of both educational and instructional television suggest that neither of these approaches is likely to allow television to fulfil the informational and tutorial role presented to it by recent technological advances. Meanwhile, instructional research has validated the direct instruction model as a very efficient method of presenting information. The present study examined how effectively direct instruction might be utilized on television by presenting a regular science program, and a copy of the same program with a carefully revised instructional commentary, to six different classrooms in upper elementary school. Results showed that the experimental group, who viewed the revised program, performed significantly better on a test of content (F (1,281) = 23.26, $p < .0001$). The authors conclude that if instructional television is to fulfil its potential, the direct instructional model deserves further consideration.

Improving teaching on television: The utility of direct instructional principles

The question of how well television teaches is likely to become increasingly important as the educational and tutorial role of the medium expands, in response to changes in video technology. An overview of the current educational broadcasting media suggests that they are not fully equipped to meet the task of presenting large quantities of information systematically.

At present, educational programming is transmitted in two distinct formats. The traditional approach, instructional television (ITV) typically utilizes a "talking teacher" format. It has been criticized for its lack of dramatic content and poor entertainment value (Crane, 1980), as well as for its failure to exploit the intrinsic attention-getting qualities of the medium (Fowles Mates, 1980). More importantly, perhaps, critical reviews of the literature on the educational impact of ITV (Kumata, 1960; Schramm, 1962) suggest that this type of programming seems to have only limited and short-term effects on children's learning. As a result, reports that less than 32% of all classrooms make even minimal usage of ITV programming are hardly surprising (Dirr, 1980). In response to the criticisms of ITV, an alternative mode of presentation, educational television (ETV), has been developed by Children's Television Workshop (Palmer, 1978). Here, education is placed in the context of appealing, entertaining television. The approach is based on a body of research which has investigated the salience of the formal features of television (Anderson & Levin, 1976; Lorch & Anderson, 1978; O'Bryan & Silverman, 1972; 1973). The resulting programs are fast-paced,

and visually exciting, and have proven popular with target audiences, not only in school, but at home also. While ETV has clearly made an important contribution by its insistence on utilizing the intrinsic qualities of television as much as possible, its educational impact is less conclusive. Claims for the educational effects of Sesame Street and The Electric Company, ETV's most prototypical and most extensively researched series, by Ball and Bogatz (1970, 1972), have been questioned by other researchers (Cook et al., 1975; Watkins et al., 1980), and need to be treated with caution.

While television may lack an effective instructional model, research on the effects of instructional variables on the academic performance of children in classrooms has been more successful. Conclusions from a major field study (Bennett, 1976), as well as from extensive reviews of the literature (Brophy, 1979; Rosenshine, 1978) agree that direct instruction is the method most highly correlated with student success. Direct instruction is a multi-faceted concept which includes a specification of desirable classroom management techniques, as well as appropriate procedures for the effective presentation of information. Rosenshine's (1978) description of how the techniques of direct instruction can lead to effective communication of information, is instructive:

> ... direct instruction refers to teaching activities focused on academic matters where goals are clear to students; ...content coverage is extensive ... the teacher controls instructional goals, chooses material appropriate for the student's ability level, and paces the instructional episode ... (1978, p. 46).

Information presentation is further enhanced by employing the mastery teach-

ing principles of beginning with easy items and providing frequent reviews. In direct instruction, emphasis is also placed on building cues into the presentation to ensure focused attention. These principles are sufficiently general that they should be readily applicable to the presentation of information on television. In order to examine the effect direct instructional principles might have on pupil outcomes, the present study compared a standard version of a randomly selected ITV science program with a revised version of the program, in which the commentary had been altered to conform more to the principles of direct instruction. The following research question was posed: What is the effect of revising an instructional television program according to the principles of direct instruction, on the learning outcomes of the children who view this program?

Method

Sample

The sample consisted of 283 children from four lower-middle class parochial schools in New York City. Four fourth-grade, three fifth-grade and three sixth-grade classes participated in the study. The classes were randomly assigned to view either the experimental or control program.

Materials

A randomly selected program from the Educational Broadcasting Corporation's science series, Odyssey, was used in this study. This series is interesting and contains a lot of information and excellent location filming. It was thus regarded as a better than average sample of ITV programming at upper elementary level. The program was evaluated using an instrument that was designed

to measure the characteristics of direct instruction, as described above. Results of the evaluation revealed that while the program had an informative commentary, it had many instructional deficits. It had not stated a goal, it contained no systematic review, was paced too rapidly and contained very few cues to focus the children's attention. A duplicate tape was then prepared in which these omissions were remedied by dubbing on a revised commentary, structured according to the principles of direct instruction. When the revised program was rated, it was found to be consistently higher on the principles of direct instruction. Interrater reliability on the rating scale, computed by the formula agreements/agreements plus disagreements was .92. Due to lack of technical facilities, dubbing was limited to those portions of the tape which were not accompanied by either music or sound effects. As a result of this limitation, less than 50% of the commentary on the duplicate program was actually revised.

Procedure

All children viewed the program assigned to them in black & white, in their own classrooms. Children were pretested prior to viewing the program, and they were posttested immediately afterwards. As an incentive, children received drawings based on the content of the program, after the experiment was completed and this proved highly reinforcing for them.

Measures

Pre- and posttest consisted of a 25 item multiple choice test, which tested knowledge of the 25 key ideas presented in the program. No effects had been found for repeated presentation of the same test, when it was tried out in a pilot study. The possible cueing effect of the pretest was controlled

by administering it randomly to just half of the classes in the sample.

Results

The experimental group scored a grand mean score of 16.51(SD:3.56) on the posttest, while the control group's grand mean score was 14.47(SD:3.55). Analysis of the difference between these two means, performed by means of a stepwise multiple regression, was significant , $F(1,281) = 23.26$, $p < .0001$. This indicates that a significant effect was obtained for experimental intervention. The effect maintained its significance even when the three grade levels had been successively entered into the regression equation, $F(3,279) = 16.04$, $p < .0001$. These significant results were obtained even though the chance difference between the pretest scores of both groups ($t(128) = 1.96$, $p < .05$) biased the results slightly in favor of the control group.

Discussion

The results of this study indicate that the revision of the experimental program according to the principles of direct instruction had a significant effect on the children's learning. The actual gain achieved by the experimental group is relatively small, but it was achieved in severely constrained circumstances. In regular television production, the visual material is used to complement and amplify the information presented, whereas, in this experiment, not only was it necessary to match the commentary to the existing visual material, but, also, technical limitations prevented the dubbing of more than 50% of the program commentary. While the definitive experiment in this area will require the resources of full-scale television production, this experiment does neverthless provide enticing evidence that television can play a more effective role in imparting information and instruction. If

television is to take its place as a tutorial and informational resource in the information age, it will need an instructional model that works. The highly systematic and well-validated direct instructional model seems an appropriate candidate.

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